

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

## (12) UK Patent Application (19) GB (11) 2 246 105 (13) A

(43) Date of A publication 22.01.1992

(21) Application No 9016057.3

(22) Date of filing 21.07.1990

(51) INT CL<sup>8</sup>  
B60R 25/02(52) UK CL (Edition K)  
B7J J101E1

(71) Applicant

Ching-Rong Wang  
No. 27, Alley 74, Lane 313, Wen-Hsien Road, Tainan,  
Taiwan(56) Documents cited  
None

(72) Inventor

Ching-Rong Wang

(58) Field of search  
UK CL (Edition K) B7J  
INT CL<sup>8</sup> B60R 25/02

(74) Agent and/or Address for Service

Rostons  
Tower Building, Water Street, Liverpool,  
L3 1BA, United Kingdom

## (54) Antitheft device

(57) An antitheft device for attachment to a steering wheel of an automobile comprises an elongated body member (6) having a passage 12 extending therethrough, first hook means (60) secured to the body member for engagement with a portion of the steering wheel from the inside thereof with the body member extending outward beyond the periphery of the steering wheel, an elongated rod member (7) adapted to move in telescopic fashion in the passage 12, second hook (72) means secured to the rod member for engaging the inside portion of the steering wheel diametrically opposed to the first hook means, and locking means 5 associated with the body member having a rod-like bearing 3 for engaging an annular groove 70 in the rod within the passage that allows the rod member to extend with respect to the body member to be locked at any of a plurality of positions and engages a groove 71 to prevent the rod member from being released from the body member.

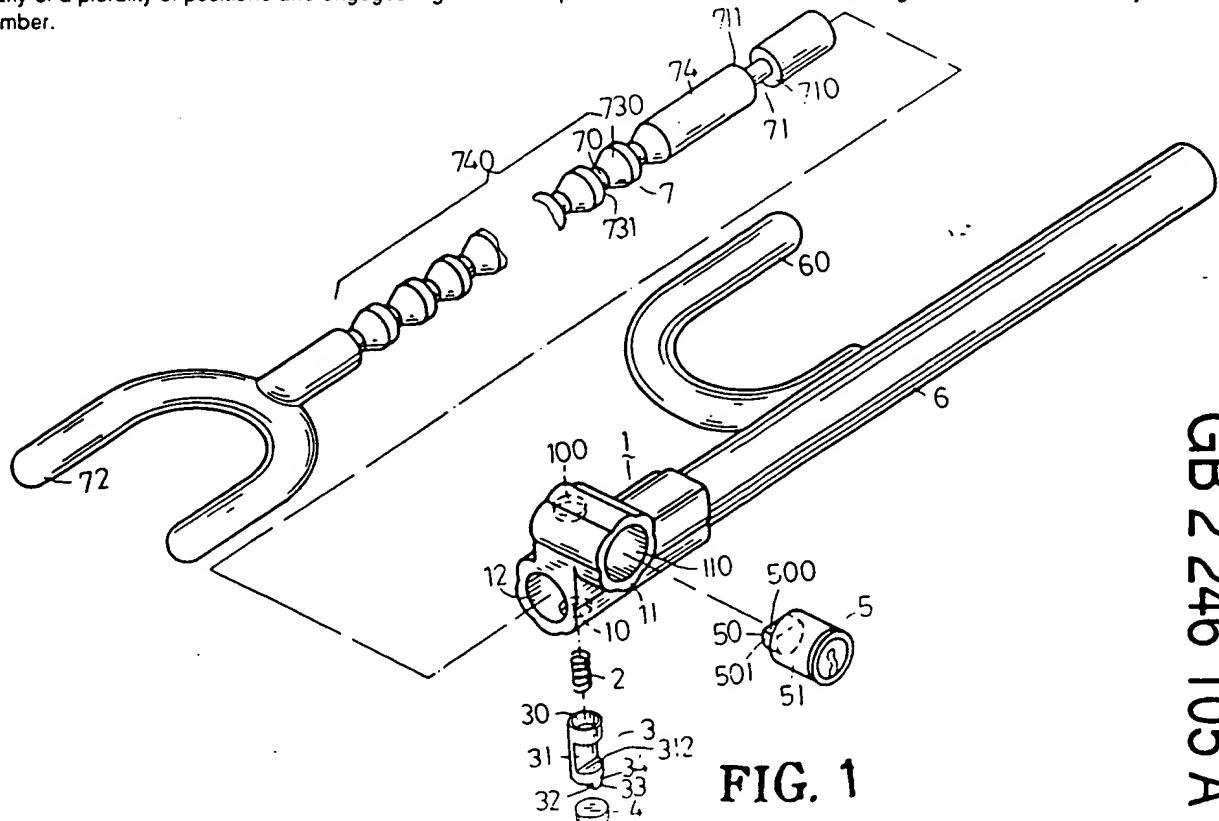


FIG. 1

GB 2 246 105 A

113

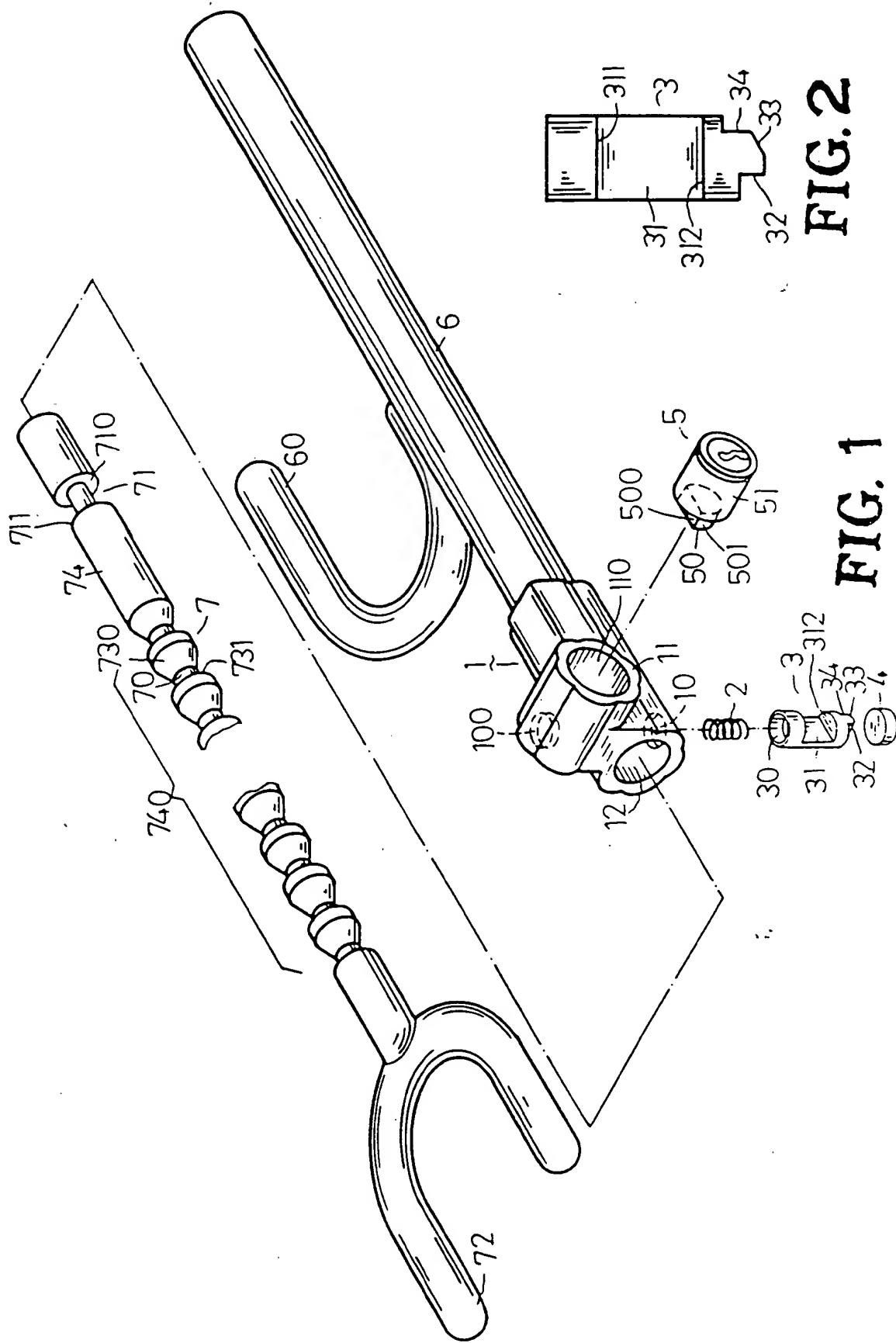


FIG. 2

FIG.

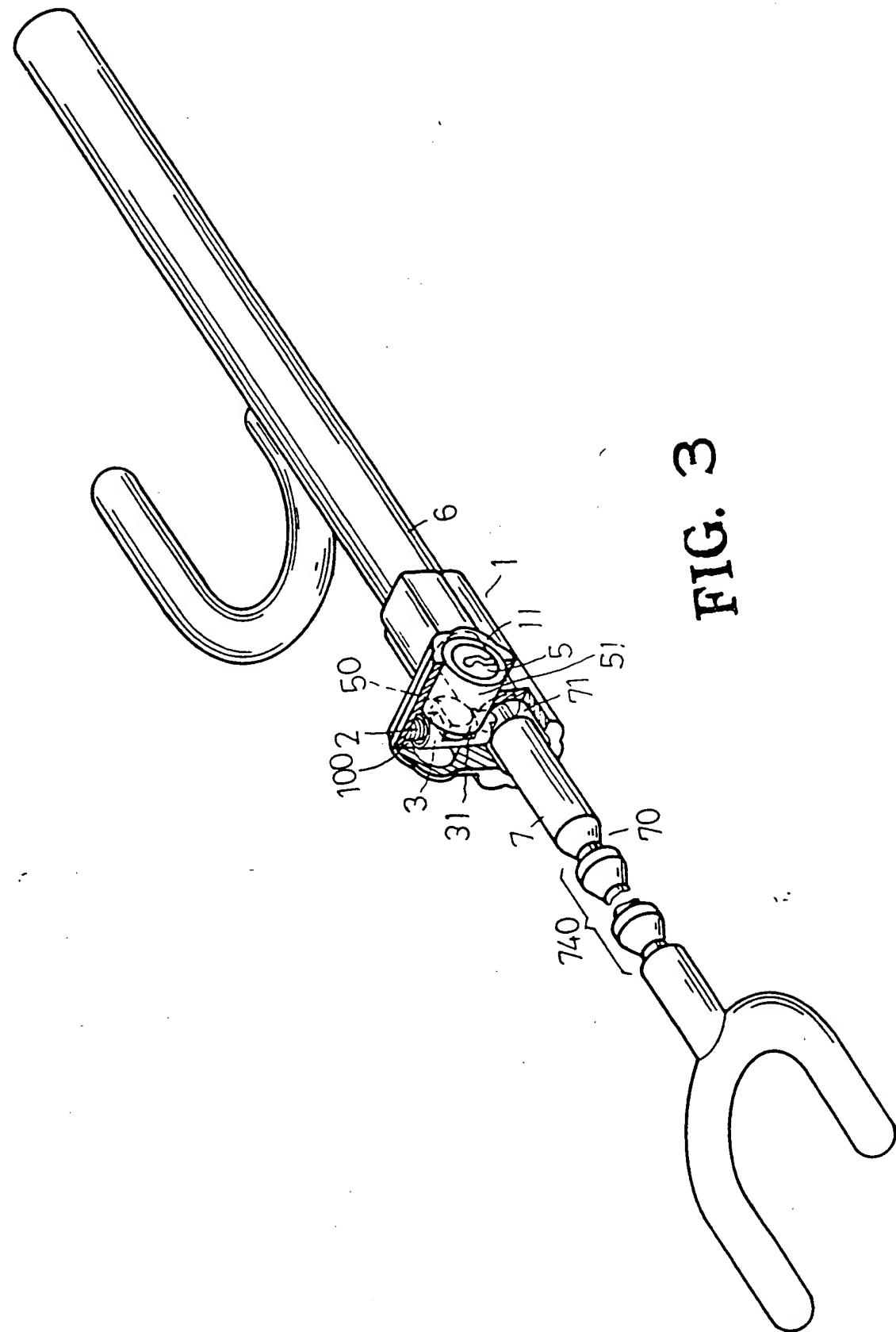
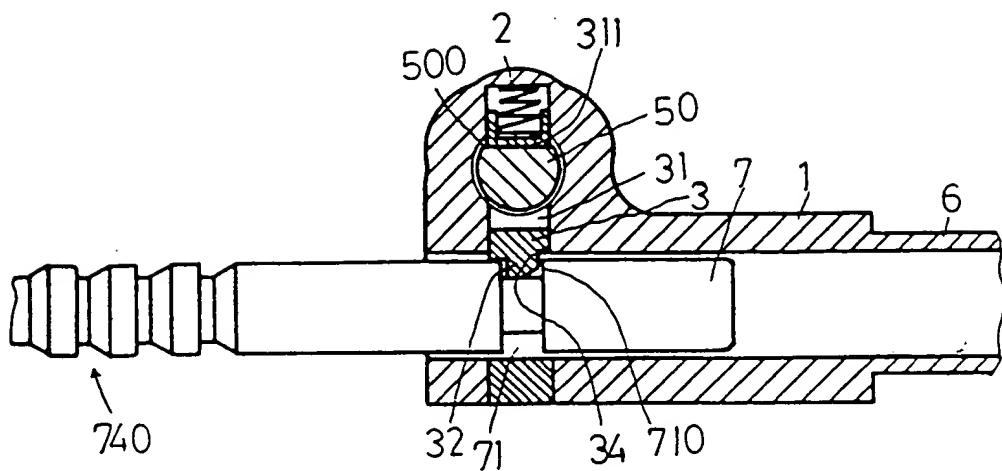
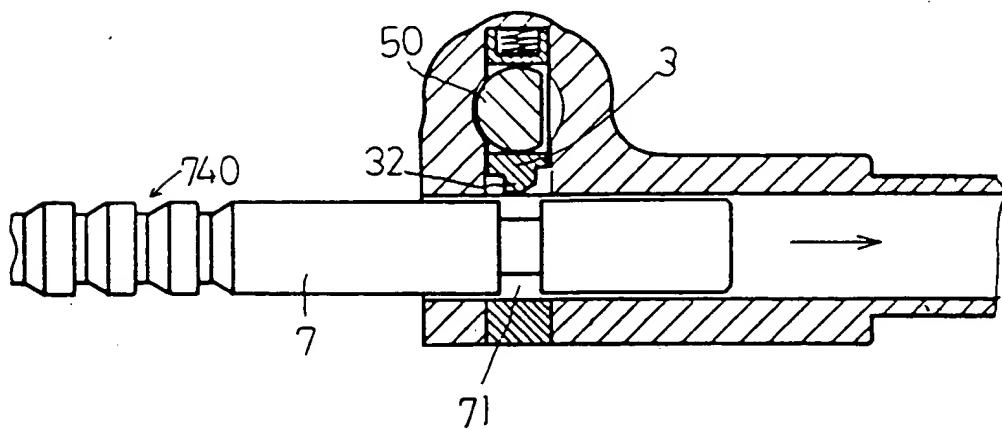


FIG. 3

3/3



**FIG. 4**



**FIG. 5**

Title: Antitheft device

DESCRIPTION

The present invention relates to an automobile antitheft device, and more particularly to a device for 5 attachment to an automobile steering wheel to prevent complete rotation thereof for securing against unauthorised driving.

My US Patent No. 4,887,443 discloses an automobile steering lock for attachment to a steering 10 wheel of an automobile comprising an elongated body member having a passage extending along an axis therethrough, first hook means secured to the body member for engagement with a portion of the steering wheel wherein the first hook means engage the wheel from 15 the inside thereof with the body member extending outward beyond the periphery of the steering wheel, an elongated rod member adapted to move in telescopic fashion in the passageway of the body member along the axis, second hook means secured to the rod member for 20 engaging the inside portion of the steering wheel diametrically opposed to the first hook means, and means associated with the body member engaging the rod within the passage that allows the rod member to extend with respect to the body member to be locked at any of a

plurality of positions. The rod member of this known antitheft device may accidentally be released from the body member by pulling the rod member too hard to extend. The releasing rod member under such a condition

5 may further hit the windshield of the car and break it.

An object of this invention is to provide an automobile steering lock that overcomes the foregoing defect associated with prior art devices.

Another object of this invention is to provide 10 an automobile steering lock that performs non-return, extension only, function in a locking condition.

A further object of this invention is to provide 15 an automobile steering lock having a mechanism for preventing a rod member thereof from being released therefrom.

According to this invention there is provided an automobile antitheft device for attachment to be a steering wheel of an automobile comprising an elongated tubular member having an inner end, an outer end and an elongated passageway extending along its axis 20 therethrough, said tubular member having a first U-shaped hook portion extending therefrom with the closed end of the U-shaped portion generally adjacent to but slightly spaced from the inner end of said tubular member and the open end of said U-shaped portion facing 25 said outer end of said tubular member but substantially

spaced therefrom, said U-shaped hook portion of said tubular member being further defined by a bottom leg portion generally extending in the direction of the axis of said tubular member and termination at a distance 5 substantially spaced for said outer end of said tubular member said U-shaped hook portion of said tubular member being adapted to engage said wheel from the inside thereof with said outer end of said tubular member extending a substantial distance beyond the periphery of 10 said wheel;

a rod member comprising an elongated rod adapted to extend in a telescopic manner within said passageway of said tubular member and a second U-shaped hook at one end of the rod, having an opening facing opposite to the 15 first hook and adapted to engage said wheel from the inside thereof;

a plurality of first spaced annular grooves each of which has a vertical side wall relatively close to the second U-shaped hook and a convex or sloping side 20 wall relatively far from the second U-shaped hook, circumferentially formed in a portion of the rod; a second annular groove having opposed vertical side walls and being circumferentially formed in an end portion of the rod opposite to the second U-shaped hook; 25 a housing means formed around an end portion of the tubular member with the elongated passageway of the

tubular member extending therethrough;  
a lock having a locking member having at least one side  
of longer dimension and one side of shorter dimension;  
means offset with respect to the axis of the tubular  
member in the housing means for receiving the lock;  
5 means in the housing means normal to the  
a passageway formed in the housing means normal to the  
locking member and interconnecting with the passageway  
of the tubular means in the housing means;  
means slidably accommodated in the  
10 housing passageway beside the lock and having a tenon  
member attached to an end thereof and arranged to be  
actuated between a locking position with the tenon  
member protruding into an annular groove of the first  
15 annular grooves or the second annular groove in the rod  
and an unlocking position with the tenon member  
withdrawn from a first or the second annular groove and  
opposed sides of the locking member being controlled to  
position the tenon member in locking or unlocking  
position through the rod-like bearing member by means of  
20 the locking member; and a spring member disposed in the  
housing passageway and biasing the rod-like bearing the  
rod-like bearing means towards the passageway in the  
tubular member.

The invention will now be further described, by  
25 way of example only, with references to the accompanying  
drawings, in which:

Figure 1 is a perspective and exploded view illustrating a preferred embodiment of the present invention;

5 Figure 2 is a side elevational view of a rod-like bearing of a locking mechanism to be used in the present invention;

Figure 3 is a perspective view of the device shown in Figure 1 in assembled condition wherein a housing is partially cut off;

10 Figure 4 is a cross-sectional view of the housing which is in engaging condition; and

Figure 5 is a cross-sectional view of the housing which is disengaging condition.

Referring to Figure 1, an automobile steering lock according to the invention which comprises an elongated body member 6, an elongated rod member 7 which is dimensioned to move in telescopic fashion within body member 6, hooks 60, 72 for engaging opposed portion of a steering wheel from the inside thereof, being 15 respectively provided on the body member 6, a locking mechanism including a locking means 5 and locating means 2, 3, being provided within the housing 1.

20 Said body member 6 includes an elongated tube 6 having a circular end portion (not shown) and defining a central passage (not shown) running through the body member 6. The first U-shaped hook 60 is fixedly secured

to the tube 6 by means of welding adjacent the end portion such that it opens rearwardly along the body member 6. Said rod member 7 includes an elongated rod 74 of circular cross-section of which the outer 5 diameter is dimensioned slightly less than the diameter of the central passage in the body member 6 to enable rod 74 to telescope freely within the body member 6. The second U-shaped hook 72 is fixedly secured to the front end of the rod 74 such that it opens opposite to 10 the hook 60 for engagement with a diametrically opposed portion of a steering wheel. A plurality of annular grooves 70 axially spaced are circumferentially provided along a major portion 740 of the 74. Each of the annular grooves 70 consists of a vertical side wall 731 15 substantially perpendicular to the longitudinal direction of the rod 74 and relatively close to the second hook 72, and a convex or slope side wall 730 relatively far from the second hook 72.

Said housing 1 is formed around the end portion 20 of the tube 6 to form an integral structure therewith wherein the central passage extends therethrough and contains the locking mechanism including the locking means 5 and locating means 2, 3.

The housing 1 includes a boss 11 integrally 25 offset with respect to the axis of the body member 6 and having a bore 110 therethrough into the housing 1

for firmly receiving the locking means 5 which has a conventional key lock 51 and a locking member 50 which includes an arcuate outer surface 501 and a flat or recess portion 500.

5 To accommodate the locating means 2, 3, a second passage (not shown) is vertically bored in the housing 1. Said vertical passage interconnects the bore 11 and the passage 12 in the housing 1, extends across the bore 110 and terminates within an outer wall thereof so as to 10 form a recess 110. A bottom hole 10 in alignment with the vertical passage is formed in an outer wall of the housing 1 to facilitate inserting the locating means 2, 3. The locating means includes a biassing spring 2 disposed within the vertical passage with one end being 15 retained in the recess 100, and a rod-like bearing 3 having a recess 30 formed in a top end portion thereof for receiving the other end of the biassing spring 2, a tenon 32 shaped on the bottom end and protruding from the vertical passage into the passage 12 to engage an 20 annular groove 70 of the rod 74 and a recess portion 31 defined by a flat bottom and opposed stop side walls 311, 312. A metal disc 4 is provided to be restored in the bottom hole 10 by means of a press fit after assembly. As best shown in Figure 2, the rear side of 25 the tenon end 32 is shaped into a vertical wall 34 and a slope bottom wall 33.

In assembly, as best shown in Figure 3, the rod-like bearing 3 is slidably fitted in the vertical passage wherein the recess portion 31 thereof faces horizontally and the locking member 51 of the locking means 5 firmly received in the bore 110 of the boss 11 extends horizontally into the recess portion 31.

The present invention disclosed heretofore is similar to the antitheft device of my US Patent No. 4,887,443. Therefore, in operation, when the flat or recess portion 500 of the locking member 50 is oriented upwardly that allows the flat or recess portion 500 abutting on the stop side wall 311 far from the rod 74 and the rod-like bearing 3 is biassed towards the rod 74 whereas the tenon 32 protrudes into an annular groove 70 to lock the device. Although in locking condition, the convex or slope side walls 730 of the grooves 70

allows the rod member 7 of this antitheft device to extend with respect to the body member 6, yet the vertical side wall engaged with the front vertical side wall of the tenon 32 prohibits the rod member 7 from 5 telescopic movement with respect to the body member 6. When the flat or recess portion 500 is turned away from the position towards and abutting on the side wall 311, rod member 7 can move in telescopic fashion within the body member 6 by withdrawing the tenon 32 of the rod-10 like bearing 3 from annular groove 70 into vertical passage.

The antitheft device of the present invention, which is similar in construction and operation to the antitheft device of my US Pat. No. 4,887,443, can 15 performs a non-return function, extension only, in locking condition so that steering attachment operation of this invention can be achieved without relating key.

As shown in FIG. 1, the end portion of the rod 74 is circumferentially formed with a groove 71 which 20 consists of opposed vertical side walls 710, 711. As mentioned above, in extending operation of known antitheft device such as the one disclosed in my US Pat. No. 4,887,443, the grooved portion 740 of the rod member 7 may be accidentally protruded from the housing 25 1, as shown in FIGS. 3 and 4, by pulling the rod member 7 too hard usually in its locking condition whereas the flat or recess portion 500 of the locking member 50 is oriented upwardly that allows the flat or recess

portion 500 abutting on the stop side wall 311 of the recess portion 31 of the rod-like bearing 3, under biasing force of the spring 2, the tenon 32 automatically protrudes into the annular groove 71 in 5 the end portion of the rod member 7 to stop extending movement of the rod member 71 by means of engagement between the vertical side wall 34 of the tenon 32 and the vertical side wall 710 of the groove 71 so as to prevent the rod member 7 from being released from the 10 body member 6. As shown in FIG.5, said rod member 7 can be retracted into normal condition by unlocking the device to withdraw the tenon 32 of the rod-like bearing 3 from annular groove 71 into vertical passage.

CLAIMS

1. An antitheft device for attachment to be a steering wheel of an automobile comprising an elongated tubular member having an inner end, an outer end and an elongated passageway extending along its axis therethrough, said tubular member having a first U-shaped hook portion extending therefrom with the closed end of the U-shaped portion generally adjacent to but slightly spaced from, the inner end of said tubular member and the open end of said U-shaped portion facing said outer end of said tubular member but substantially spaced therefrom, said U-shaped hook portion of said tubular member being further defined by a bottom leg portion generally extending in the direction of the axis of said tubular member and termination at a distance substantially spaced from said outer end of said tubular member said U-shaped hook portion of said tubular member being adapted to engage said wheel from the inside thereof with said outer end of said tubular member extending a substantial distance beyond the periphery of said wheel;

a rod member comprising an elongated rod adapted to extend in a telescopic manner within said passageway of

said tubular member and a second U-shaped hook at one end of the rod, having an opening facing opposite to the first hook and adapted to engage said wheel from the inside thereof;

5 a plurality of first spaced annular grooves each of which has a vertical side wall relatively close to the second U-shaped hook and a convex or sloping side wall relatively far from the second U-shaped hook, circumferentially formed in a portion of the rod;

10 a second annular groove having opposed vertical side walls and being circumferentially formed in an end portion of the rod opposite to the second U-shaped hook; a housing means formed around an end portion of the tubular member with the elongated passageway of the 15 tubular member extending therethrough;

a lock having a locking member having at least one side of longer dimension and one side of shorter dimension; means offset with respect to the axis of the tubular member in the housing means for receiving the lock;

20 a passageway formed in the housing means normal to the locking member and interconnecting with the passageway of the tubular means in the housing means;

25 rod-like bearing means slidably accommodated in the housing passageway beside the lock and having a tenon member attached to an end thereof and arranged to be actuated between a locking position with the tenon

member protruding into an annular groove of the first annular grooves or the second annular groove in the rod and an unlocking position with the tenon member withdrawn from a first or the second annular groove and 5 opposed sides of the locking member being controlled to position the tenon member in locking or unlocking position through the rod-like bearing member by means of the locking member; and a spring member disposed in the housing passageway and biassing the rod-like bearing the 10 rod-like bearing means towards the passageway in the tubular member.

2. An antitheft device substantially as hereinbefore described with reference to and an illustrated in the accompanying drawings.